1223FPC.ST25
SEQUENCE LISTING

<110> ORIDIS BIOMED Forschungs- und Entwicklungs GmbH
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Buck, Charles R.
Zatloukal, Kurt

<120> Polypeptides and nucleic acids encoding these and their use for the prevention, diagnosis or treatment of liver disorders and epithelial cancer

<130> Oridis Biomed

<140> 1223FPC
<141> 2003-09-22

<160> 73

<170> PatentIn version 3.1

<210> 1
<211> 654
<212> PRT
<213> Homo sapiens

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Ile Tyr Asp Val Ser Gly Glu Ser Asn Ser Ala Val Ser Thr Glu Asp
35 40 45

Leu Lys Glu Cys Leu Lys Lys Gln Leu Glu Phe Cys Phe Ser Arg Glu
50 55 60

Asn Leu Ser Lys Asp Leu Tyr Leu Ile Ser Gln Met Asp Ser Asp Gln
65 70 75 80

Phe Ile Pro Ile Trp Thr Val Ala Asn Met Glu Glu Ile Lys Lys Leu
85 90 95

Thr Thr Asp Pro Asp Leu Ile Leu Glu Val Leu Arg Ser Ser Pro Met
100 105 110

Val Gln Val Asp Glu Lys Gly Glu Lys Val Arg Pro Ser His Lys Arg
115 120 125

Cys Ile Val Ile Leu Arg Glu Ile Pro Glu Thr Thr Pro Ile Glu Glu
130 135 140

Val Lys Gly Leu Phe Lys Ser Glu Asn Cys Pro Lys Val Ile Ser Cys

145 150 155 160

Glu Phe Ala His Asn Ser Asn Trp Tyr Ile Thr Phe Gln Ser Asp Thr
165 170 175

Asp Ala Gln Gln Ala Phe Lys Tyr Leu Arg Glu Glu Val Lys Thr Phe
180 185 190

Gln Gly Lys Pro Ile Met Ala Arg Ile Lys Ala Ile Asn Thr Phe Phe
195 200 205

Ala Lys Asn Gly Tyr Arg Leu Met Asp Ser Ser Ile Tyr Ser His Pro
210 215 220

Ile Gln Thr Gln Ala Gln Tyr Ala Ser Pro Val Phe Met Gln Pro Val
225 230 235 240

Tyr Asn Pro His Gln Gln Tyr Ser Val Tyr Ser Ile Val Pro Gln Ser
245 250 255

Trp Ser Pro Asn Pro Thr Pro Tyr Phe Glu Thr Pro Leu Ala Pro Phe
260 265 270

Pro Asn Gly Ser Phe Val Asn Gly Phe Asn Ser Pro Gly Ser Tyr Lys
275 280 285

Thr Asn Ala Ala Ala Met Asn Met Gly Arg Pro Phe Gln Lys Asn Arg
290 295 300

Val Lys Pro Gln Phe Arg Ser Ser Gly Gly Ser Glu His Ser Thr Glu
305 310 315 320

Gly Ser Val Ser Leu Gly Asp Gly Gln Leu Asn Arg Tyr Ser Ser Arg
325 330 335

Asn Phe Pro Ala Glu Arg His Asn Pro Thr Val Thr Gly His Gln Glu
340 345 350

Gln Thr Tyr Leu Gln Lys Glu Thr Ser Thr Leu Gln Val Glu Gln Asn
355 360 365

Gly Asp Tyr Gly Arg Gly Arg Arg Thr Leu Phe Arg Gly Arg Arg Arg
370 375 380

Arg Glu Asp Asp Arg Ile Ser Arg Pro His Pro Ser Thr Ala Glu Ser
385 390 395 400

Lys Ala Pro Thr Pro Lys Phe Asp Leu Leu Ala Ser Asn Phe Pro Pro
405 410 415

Leu Pro Gly Ser Ser Ser Arg Met Pro Gly Glu Leu Val Leu Glu Asn
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Arg Met Ser Asp Val Val Lys Gly Val Tyr Lys Glu Lys Asp Asn Glu
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Glu Leu Thr Ile Ser Cys Pro Val Pro Ala Asp Glu Gln Thr Glu Cys
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Glu Leu Thr Ala Leu Ser Thr Thr Gln Gln Glu Lys Asp Leu Ile Glu
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Asp Ser Ser Val Gln Lys Asp Gly Leu Asn Gln Thr Thr Ile Pro Val
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Ser Pro Pro Ser Thr Thr Lys Pro Ser Arg Ala Ser Thr Ala Ser Pro
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Cys Asn Asn Asn Ile Asn Ala Ala Thr Ala Val Ala Leu Gln Glu Pro
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Arg Lys Leu Ser Tyr Ala Glu Val Cys Gln Lys Pro Pro Lys Glu Pro
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Ser Pro Thr Lys Asn Glu Asp Asn Gly Ala Pro Glu Asn Ser Val Glu
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Lys Pro His Glu Lys Pro Glu Ala Arg Ala Ser Lys Asp Tyr Ser Gly
595 600 605

Phe Arg Gly Asn Ile Ile Pro Arg Gly Ala Ala Gly Lys Ile Arg Glu
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625 630 635 640

Arg Asn Gly Lys Glu Gln Tyr Val Pro Pro Arg Ser Pro Lys
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Ser Ala Ser Gln Glu Glu Ser Ser Arg Glu Pro Asp His Ala Gly Thr
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Leu Ile Val Asp Ile Ser Thr Ser Arg Thr Val Ile Gln Asn Ala Tyr
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Val Ser Leu Glu Glu Thr Leu Lys
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Leu Gln Arg Asp Arg Cys Leu Tyr His Asn Thr Lys Leu Asp Asn Asn
            20                  25                  30

Leu Asp Ser Val Ser Leu Leu Ile Asp His Val Cys Ser Arg Arg Gln
        35                  40                  45

Phe Pro Cys Tyr Thr Gln Gln Ile Leu Thr Glu His Cys Asn Glu Val
    50                  55                  60

Trp Phe Cys Lys Phe Ser Asn Asp Gly Thr Lys Leu Ala Thr Gly Ser
65                  70                  75                  80

Lys Asp Thr Thr Val Ile Ile Trp Gln Val Asp Pro Asp Thr His Leu
                85                  90                  95

Leu Lys Leu Leu Lys Thr Leu Glu Gly His Ala Tyr Gly Val Ser Tyr
            100                 105                 110
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Ile Ala Trp Ser Pro Asp Asp Asn Tyr Leu Val Ala Cys Gly Pro Asp
        115                 120                 125

Asp Cys Ser Glu Leu Trp Leu Trp Asn Val Gln Thr Gly Glu Leu Arg
    130                 135                 140

Thr Lys Met Ser Gln Ser His Glu Asp Ser Leu Thr Ser Val Ala Trp
145                 150                 155                 160

Asn Pro Asp Gly Lys Arg Phe Val Thr Gly Gly Gln Arg Gly Gln Phe
                165                 170                 175

Tyr Gln Cys Asp Leu Asp Gly Asn Leu Leu Asp Ser Trp Glu Gly Val
            180                 185                 190

Arg Val Gln Cys Leu Trp Cys Leu Ser Asp Gly Lys Thr Val Leu Ala
        195                 200                 205

Ser Asp Thr His Gln Arg Ile Arg Gly Tyr Asn Phe Glu Asp Leu Thr
    210                 215                 220

Asp Arg Asn Ile Val Gln Glu Asp His Pro Ile Met Ser Phe Thr Ile
225                 230                 235                 240

Ser Lys Asn Gly Arg Leu Ala Leu Leu Asn Val Ala Thr Gln Gly Val
                245                 250                 255

His Leu Trp Asp Leu Gln Asp Arg Val Leu Val Arg Lys Tyr Gln Gly
            260                 265                 270

Val Thr Gln Gly Phe Tyr Thr Ile His Ser Cys Phe Gly Gly His Asn
        275                 280                 285

Glu Asp Phe Ile Ala Ser Gly Ser Glu Asp His Lys Val Tyr Ile Trp
    290                 295                 300

His Lys Arg Ser Glu Leu Pro Ile Ala Glu Leu Thr Gly His Thr Arg
305                 310                 315                 320

Thr Val Asn Cys Val Ser Trp Asn Pro Gln Ile Pro Ser Met Met Ala
                325                 330                 335

Ser Ala Ser Asp Asp Gly Thr Val Arg Ile Trp Gly Pro Ala Pro Phe
            340                 345                 350

Ile Asp His Gln Asn Ile Glu Glu Glu Cys Ser Ser Met Asp Ser
        355                 360                 365
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<213> Homo sapiens

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Gly Ser Asp Arg Phe Ala Arg Pro Asp Phe Arg Asp Ile Ser Lys Trp
            20                  25                  30

Asn Asn Arg Val Val Ser Asn Leu Leu Tyr Tyr Gln Thr Asn Tyr Leu
        35                  40                  45

Val Val Ala Ala Met Met Ile Ser Ile Val Gly Phe Leu Ser Pro Phe
    50                  55                  60

Asn Met Ile Leu Gly Gly Ile Val Val Val Leu Val Phe Thr Gly Phe
65                  70                  75                  80

Val Trp Ala Ala His Asn Lys Asp Val Leu Arg Arg Met Lys Lys Arg
                85                  90                  95

Tyr Pro Thr Thr Phe Val Met Val Val Met Leu Ala Ser Tyr Phe Leu
            100                 105                 110

Ile Ser Met Phe Gly Gly Val Met Val Phe Val Phe Gly Ile Thr Phe
        115                 120                 125

Pro Leu Leu Leu Met Phe Ile His Ala Ser Leu Arg Leu Arg Asn Leu
    130                 135                 140

Lys Asn Lys Leu Glu Asn Lys Met Glu Gly Ile Gly Leu Lys Arg Thr
145                 150                 155                 160

Pro Met Gly Ile Val Leu Asp Ala Leu Glu Gln Gln Glu Glu Gly Ile
                165                 170                 175

Asn Arg Leu Thr Asp Tyr Ile Ser Lys Val Lys Glu
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<213> Homo sapiens

<400> 5

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Met Met Leu Lys Gly Ile Thr Arg Leu Ile Ser Arg Ile His Lys Leu
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Asp Pro Gly Arg Phe Leu His Met Gly Thr Gln Ala Arg Gln Ser Ile
            20                  25                  30

Ala Ala His Leu Asp Asn Gln Val Pro Val Glu Ser Pro Arg Ala Ile
        35                  40                  45

Ser Arg Thr Asn Glu Asn Asp Pro Ala Lys His Gly Asp Gln His Glu
    50                  55                  60

Gly Gln His Tyr Asn Ile Ser Pro Gln Asp Leu Glu Thr Val Phe Pro
65                  70                  75                  80

His Gly Leu Pro Pro Arg Phe Val Met Gln Val Lys Thr Phe Ser Glu
                85                  90                  95

Ala Cys Leu Met Val Arg Lys Pro Ala Leu Glu Leu Leu His Tyr Leu
            100                 105                 110

Lys Asn Thr Ser Phe Ala Tyr Pro Ala Ile Arg Tyr Leu Leu Tyr Gly
        115                 120                 125

Glu Lys Gly Thr Gly Lys Thr Leu Ser Leu Cys His Val Ile His Phe
    130                 135                 140

Cys Ala Lys Gln Asp Trp Leu Ile Leu His Ile Pro Asp Ala His Leu
145                 150                 155                 160

Trp Val Lys Asn Cys Arg Asp Leu Leu Gln Ser Ser Tyr Asn Lys Gln
                165                 170                 175

Arg Phe Asp Gln Pro Leu Glu Ala Ser Thr Trp Leu Lys Asn Phe Lys
            180                 185                 190

Thr Thr Asn Glu Arg Phe Leu Asn Gln Ile Lys Val Gln Glu Lys Tyr
        195                 200                 205

Val Trp Asn Lys Arg Glu Ser Thr Glu Lys Gly Ser Pro Leu Gly Glu
    210                 215                 220

Val Val Glu Gln Gly Ile Thr Arg Val Arg Asn Ala Thr Asp Ala Val
225                 230                 235                 240

Gly Ile Val Leu Lys Glu Leu Lys Arg Gln Ser Ser Leu Gly Met Phe
                245                 250                 255
```

```
His Leu Leu Val Ala Val Asp Gly Ile Asn Ala Leu Trp Gly Arg Thr
            260                 265                 270

Thr Leu Lys Arg Glu Asp Lys Ser Pro Ile Ala Pro Glu Glu Leu Ala
        275                 280                 285

Leu Val His Asn Leu Arg Lys Met Met Lys Asn Asp Trp His Gly Gly
    290                 295                 300

Ala Ile Val Ser Ala Leu Ser Gln Thr Gly Ser Leu Phe Lys Pro Arg
305                 310                 315                 320

Lys Ala Tyr Leu Pro Gln Glu Leu Leu Gly Lys Glu Gly Phe Asp Ala
                325                 330                 335

Leu Asp Pro Phe Ile Pro Ile Leu Val Ser Asn Tyr Asn Pro Lys Glu
            340                 345                 350

Phe Glu Ser Cys Ile Gln Tyr Tyr Leu Glu Asn Asn Trp Leu Gln His
        355                 360                 365

Glu Lys Ala Pro Thr Glu Glu Gly Lys Lys Glu Leu Leu Phe Leu Ser
    370                 375                 380

Asn Ala Asn Pro Ser Leu Leu Glu Arg His Cys Ala Tyr Leu
385                 390                 395
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<212> PRT
<213> Homo sapiens

<400> 6

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Met Ala Gly Pro Glu Leu Leu Leu Asp Ser Asn Ile Arg Leu Trp Val
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Val Leu Pro Ile Val Ile Ile Thr Phe Phe Val Gly Met Ile Arg His
            20                  25                  30

Tyr Val Ser Ile Leu Leu Gln Ser Asp Lys Lys Leu Thr Gln Glu Gln
        35                  40                  45

Val Ser Asp Ser Gln Val Leu Ile Arg Ser Arg Val Leu Arg Glu Asn
    50                  55                  60

Gly Lys Tyr Ile Pro Lys Gln Ser Phe Leu Thr Arg Lys Tyr Tyr Phe
65                  70                  75                  80
```

```
Asn Asn Pro Glu Asp Gly Phe Phe Lys Lys Thr Lys Arg Lys Val Val
                85                  90                  95

Pro Pro Ser Pro Met Thr Asp Pro Thr Met Leu Thr Asp Met Met Lys
            100                 105                 110

Gly Asn Val Thr Asn Val Leu Pro Met Ile Leu Ile Gly Gly Trp Ile
        115                 120                 125

Asn Met Thr Phe Ser Gly Phe Val Thr Thr Lys Val Pro Phe Pro Leu
    130                 135                 140

Thr Leu Arg Phe Lys Pro Met Leu Gln Gln Gly Ile Glu Leu Leu Thr
145                 150                 155                 160

Leu Asp Ala Ser Trp Val Ser Ser Ala Ser Trp Tyr Phe Leu Asn Val
                165                 170                 175

Phe Gly Leu Arg Ser Ile Tyr Ser Leu Ile Leu Gly Gln Asp Asn Ala
            180                 185                 190

Ala Asp Gln Ser Arg Met Met Gln Glu Gln Met Thr Gly Ala Ala Met
        195                 200                 205

Ala Met Pro Ala Asp Thr Asn Lys Ala Phe Lys Thr Glu Trp Glu Ala
    210                 215                 220

Leu Glu Leu Thr Asp His Gln Trp Ala Leu Asp Asp Val Glu Glu Glu
225                 230                 235                 240

Leu Met Ala Lys Asp Leu His Phe Glu Gly Met Phe Lys Lys Glu Leu
                245                 250                 255

Gln Thr Ser Ile Phe
            260
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<210> 7
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<212> PRT
<213> Homo sapiens

<400> 7

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Met Ser Gly Arg Val Gly Asp Leu Ser Pro Arg Gln Lys Glu Ala Leu
1               5                   10                  15

Ala Lys Phe Arg Glu Asn Val Gln Asp Val Leu Pro Ala Leu Pro Asn
            20                  25                  30
```

```
Pro Asp Asp Tyr Phe Leu Leu Arg Trp Leu Arg Ala Arg Ser Phe Asp
        35                  40                  45

Leu Gln Lys Ser Glu Ala Met Leu Arg Lys His Val Glu Phe Arg Lys
    50                  55                  60

Gln Lys Asp Ile Asp Asn Ile Ile Ser Trp Gln Pro Pro Glu Val Ile
65                  70                  75                  80

Gln Gln Tyr Leu Ser Gly Gly Met Cys Gly Tyr Asp Leu Asp Gly Cys
                85                  90                  95

Pro Val Trp Tyr Asp Ile Ile Gly Pro Leu Asp Ala Lys Gly Leu Leu
            100                 105                 110

Phe Ser Ala Ser Lys Gln Asp Leu Leu Arg Thr Lys Met Arg Glu Cys
        115                 120                 125

Glu Leu Leu Leu Gln Glu Cys Ala His Gln Thr Thr Lys Leu Gly Arg
    130                 135                 140

Lys Val Glu Thr Ile Thr Ile Ile Tyr Asp Cys Glu Gly Leu Gly Leu
145                 150                 155                 160

Lys His Leu Trp Lys Pro Ala Val Glu Ala Tyr Gly Glu Phe Leu Cys
                165                 170                 175

Met Phe Glu Glu Asn Tyr Pro Glu Thr Leu Lys Arg Leu Phe Val Val
            180                 185                 190

Lys Ala Pro Lys Leu Phe Pro Val Ala Tyr Asn Leu Ile Lys Pro Phe
        195                 200                 205

Leu Ser Glu Asp Thr Arg Lys Lys Ile Met Val Leu Gly Ala Asn Trp
    210                 215                 220

Lys Glu Val Leu Leu Lys His Ile Ser Pro Asp Gln Val Pro Val Glu
225                 230                 235                 240

Tyr Gly Gly Thr Met Thr Asp Pro Asp Gly Asn Pro Lys Cys Lys Ser
                245                 250                 255

Lys Ile Asn Tyr Gly Gly Asp Ile Pro Arg Lys Tyr Tyr Val Arg Asp
            260                 265                 270

Gln Val Lys Gln Gln Tyr Glu His Ser Val Gln Ile Ser Arg Gly Ser
        275                 280                 285
```

```
Ser His Gln Val Glu Tyr Glu Ile Leu Phe Pro Gly Cys Val Leu Arg
    290                 295                 300

Trp Gln Phe Met Ser Asp Gly Ala Asp Val Gly Phe Gly Ile Phe Leu
305                 310                 315                 320

Lys Thr Lys Met Gly Glu Arg Gln Arg Ala Gly Glu Met Thr Glu Val
                325                 330                 335

Leu Pro Asn Gln Arg Tyr Asn Ser His Leu Val Pro Glu Asp Gly Thr
            340                 345                 350

Leu Thr Cys Ser Asp Pro Gly Ile Tyr Val Leu Arg Phe Asp Asn Thr
        355                 360                 365

Tyr Ser Phe Ile His Ala Lys Lys Val Asn Phe Thr Val Glu Val Leu
    370                 375                 380

Leu Pro Asp Lys Ala Ser Glu Glu Lys Met Lys Gln Leu Gly Ala Gly
385                 390                 395                 400

Thr Pro Lys
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<210> 8
<211> 251
<212> PRT
<213> Homo sapiens

<400> 8

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Met Asp Met Lys Arg Arg Ile His Leu Glu Leu Arg Asn Arg Thr Pro
1               5                   10                  15

Ala Ala Val Arg Glu Leu Val Leu Asp Asn Cys Lys Ser Asn Asp Gly
            20                  25                  30

Lys Ile Glu Gly Leu Thr Ala Glu Phe Val Asn Leu Glu Phe Leu Ser
        35                  40                  45

Leu Ile Asn Val Gly Leu Ile Ser Val Ser Asn Leu Pro Lys Leu Pro
    50                  55                  60

Lys Leu Lys Lys Leu Glu Leu Ser Glu Asn Arg Ile Phe Gly Gly Leu
65                  70                  75                  80

Asp Met Leu Ala Glu Lys Leu Pro Asn Leu Thr His Leu Asn Leu Ser
                85                  90                  95
```

Gly Asn Lys Leu Lys Asp Ile Ser Thr Leu Glu Pro Leu Lys Lys Leu
100 105 110

Glu Cys Leu Lys Ser Leu Asp Leu Phe Asn Cys Glu Val Thr Asn Leu
115 120 125

Asn Asp Tyr Arg Glu Ser Val Phe Lys Leu Leu Pro Gln Leu Thr Tyr
130 135 140

Leu Asp Gly Tyr Asp Arg Glu Asp Gln Glu Ala Pro Asp Ser Asp Ala
145 150 155 160

Glu Val Asp Gly Val Asp Glu Glu Glu Glu Asp Glu Glu Gly Glu Asp
165 170 175

Glu Glu Asp Glu Asp Asp Glu Asp Gly Glu Glu Glu Glu Phe Asp Glu
180 185 190

Glu Asp Asp Glu Asp Glu Asp Val Glu Gly Asp Glu Asp Asp Asp Glu
195 200 205

Val Ser Glu Glu Glu Glu Glu Phe Gly Leu Asp Glu Glu Asp Glu Asp
210 215 220

Glu Asp Glu Asp Glu Glu Glu Glu Glu Gly Gly Lys Gly Glu Lys Arg
225 230 235 240

Lys Arg Glu Thr Asp Asp Glu Gly Glu Asp Asp
245 250

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<400> 9

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Ser Arg Ala Pro Gln Met Arg Ala Ala Pro Arg Pro Ala Pro Val Ala
20 25 30

Gln Pro Pro Ala Ala Ala Pro Pro Ser Ala Val Gly Ser Ser Ala Ala
35 40 45

Ala Pro Arg Gln Pro Gly Leu Met Ala Gln Met Ala Thr Thr Ala Ala
50 55 60

Gly Val Ala Val Gly Ser Ala Val Gly His Thr Leu Gly His Ala Ile
65 70 75 80

Thr Gly Gly Phe Ser Gly Gly Ser Asn Ala Glu Pro Ala Arg Pro Asp
85 90 95

Ile Thr Tyr Gln Glu Pro Gln Gly Thr Gln Pro Ala Gln Gln Gln Gln
100 105 110

Pro Cys Leu Tyr Glu Ile Lys Gln Phe Leu Glu Cys Ala Gln Asn Gln
115 120 125

Gly Asp Ile Lys Leu Cys Glu Gly Phe Asn Glu Val Leu Lys Gln Cys
130 135 140

Arg Leu Ala Asn Gly Leu Ala
145 150

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caaagtataa agttgctgct aacatatata catatacatc catattttat aagggtgtct 180

atgtatatat agacagtgtg tccacacaaa aaatagatac agttatcagt cagtcagttc 240

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Gln Ser Ala Asn Tyr Thr Cys Val Ala Met Ser Thr Leu Gly Val Ile
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Glu Ala Ile Ala Gln Ile Thr Val Lys Ala Leu Pro Lys Pro Pro Gly
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Thr Pro Val Val Thr Glu Ser Thr Ala Thr Ser Ile Thr Leu Thr Trp
85 90 95

Asp Ser Gly Asn Pro Glu Pro Val Ser Tyr Tyr Ile Ile Gln His Lys
100 105 110

Pro Lys Asn Ser Glu Glu Pro Tyr Lys Glu Ile Asp Gly Ile Ala Thr
115 120 125

Thr Arg Tyr Ser Val Ala Gly Leu Ser Pro Tyr Ser Asp Tyr Glu Phe
130 135 140

Arg Val Val Ala Val Asn Asn Ile Gly Arg Gly Pro Ala Ser Glu Pro

145 150 155 160

Val Leu Thr Gln Thr Ser Glu Gln Ala Pro Ser Ser Ala Pro Arg Asp
165 170 175

Val Gln Ala Arg Met Leu Ser Ser Thr Thr Ile Leu Val Gln Trp Lys
180 185 190

Glu Pro Glu Glu Pro Asn Gly Gln Ile Gln Gly Tyr Arg Val Tyr Tyr
195 200 205

Thr Met Asp Pro Thr Gln His Val Asn Asn Trp Met Lys His Asn Val
210 215 220

Ala Asp Ser Gln Ile Thr Thr Ile Gly Asn Leu Val Pro Gln Lys Thr
225 230 235 240

Tyr Ser Val Lys Val Leu Ala Phe Thr Ser Ile Gly Asp Gly Pro Leu
245 250 255

Ser Ser Asp Ile Gln Val Ile Thr Gln Thr Gly Val Pro Gly Gln Pro
260 265 270

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275 280 285

Trp Thr Pro Pro Arg Ser Asp Thr Ile Ala Ser Tyr Glu Leu Val Tyr
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Arg Asp Gly Asp Gln Gly Glu Glu Gln Arg Ile Thr Ile Glu Pro Gly
305 310 315 320

Thr Ser Tyr Arg Leu Gln Gly Leu Lys Pro Asn Ser Leu Tyr Tyr Phe
325 330 335

Arg Leu Ser Ala Arg Ser Pro Gln Gly Leu Gly Ala Ser Thr Ala Glu
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Ile Ser Ala Arg Thr Met Gln Ser Met Phe Ala Lys Asn Phe His Val
355 360 365

Lys Ala Val Met Lys Thr Ser Val Leu Leu Ser Trp Glu Ile Pro Glu
370 375 380

Asn Tyr Asn Ser Ala Met Pro Phe Lys Ile Leu Tyr Asp Asp Gly Lys
385 390 395 400

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Ser Ala Gly Gly Leu Gln His Arg Val Thr Ala Lys Thr Ala Pro Asp
        435                 440                 445

Val Leu Arg Thr Lys Pro Ala Phe Ile Gly Lys Thr Asn Leu Asp Gly
    450                 455                 460

Met Ile Thr Val Gln Leu Pro Asp Val Pro Ala Asn Glu Asn Ile Lys
465                 470                 475                 480

Gly Tyr Tyr Ile Ile Ile Val Pro Leu Lys Lys Ser Arg Gly Lys Phe
                485                 490                 495

Ile Lys Pro Trp Glu Ser Pro Asp Glu Met Glu Leu Asp Glu Leu Leu
            500                 505                 510

Lys Glu Ile Ser Arg Lys Arg Arg Ser Ile Arg Tyr Gly Arg Glu Val
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Glu Leu Lys Pro Tyr Ile Ala Ala His Phe Asp Val Leu Pro Thr Glu
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Phe Thr Leu Gly Asp Asp Lys His Tyr Gly Gly Phe Thr Asn Lys Gln
545                 550                 555                 560

Leu Gln Ser Gly Gln Glu Tyr Val Phe Phe Val Leu Ala Val Met Asp
                565                 570                 575

His Ala Glu Ser Lys Met Tyr Ala Thr Ser Pro Tyr Ser Asp Pro Val
            580                 585                 590

Val Ser Met Asp Leu Asp Pro Gln Pro Ile Thr Asp Glu Glu Glu Gly
        595                 600                 605

Leu Ile Trp Val Val Gly Pro Val Leu Ala Val Val Phe Ile Ile Cys
    610                 615                 620

Ile Val Ile Ala Ile Leu Leu Tyr Lys Arg Lys Arg Ala Glu Ser Glu
625                 630                 635                 640

Ser Arg Lys Ser Ser Leu Pro Asn Ser Lys Glu Val Pro Ser His His
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Pro Thr Asp Pro Val Glu Leu Arg Arg Leu Asn Phe Gln Thr Pro Gly
660 665 670

Met Ala Ser His Pro Pro Ile Pro Ile Leu Glu Leu Ala Asp His Ile
675 680 685

Glu Arg Leu Lys Ala Asn Asp Asn Leu Lys Phe Ser Gln Glu Tyr Glu
690 695 700

Ser Ile Asp Pro Gly Gln Gln Phe Thr Trp Glu His Ser Asn Leu Glu
705 710 715 720

Val Asn Lys Pro Lys Asn Arg Tyr Ala Asn Val Ile Ala Tyr Asp His
725 730 735

Ser Arg Val Leu Leu Ser Ala Ile Glu Gly Ile Pro Gly Ser Asp Tyr
740 745 750

Val Asn Ala Asn Tyr Ile Asp Gly Tyr Arg Lys Gln Asn Ala Tyr Ile
755 760 765

Ala Thr Gln Gly Ser Leu Pro Glu Thr Phe Gly Asp Phe Trp Arg Met
770 775 780

Ile Trp Glu Gln Arg Ser Ala Thr Val Val Met Met Thr Lys Leu Glu
785 790 795 800

Glu Arg Ser Arg Val Lys Cys Asp Gln Tyr Trp Pro Ser Arg Gly Thr
805 810 815

Glu Thr His Gly Leu Val Gln Val Thr Leu Leu Asp Thr Val Glu Leu
820 825 830

Ala Thr Tyr Cys Val Arg Thr Phe Ala Leu Tyr Lys Asn Gly Ser Ser
835 840 845

Glu Lys Arg Glu Val Arg Gln Phe Gln Phe Thr Ala Trp Pro Asp His
850 855 860

Gly Val Pro Glu His Pro Thr Pro Phe Leu Ala Phe Leu Arg Arg Val
865 870 875 880

Lys Thr Cys Asn Pro Pro Asp Ala Gly Pro Met Val Val His Cys Ser
885 890 895

Ala Gly Val Gly Arg Thr Gly Cys Phe Ile Val Ile Asp Ala Met Leu
900 905 910

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Glu Arg Ile Lys His Glu Lys Thr Val Asp Ile Tyr Gly His Val Thr
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Leu Met Arg Ala Gln Arg Asn Tyr Met Val Gln Thr Glu Asp Gln Tyr
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Ile Phe Ile His Asp Ala Leu Leu Glu Ala Val Thr Cys Gly Asn Thr
945                 950                 955                 960

Glu Val Pro Ala Arg Asn Leu Tyr Ala Tyr Ile Gln Lys Leu Thr Gln
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Ile Glu Thr Gly Glu Asn Val Thr Gly Met Glu Leu Glu Phe Lys Arg
            980                 985                 990

Leu Ala Ser Ser Lys Ala His Thr  Ser Arg Phe Ile Ser  Ala Asn Leu
        995                 1000                1005

Pro Cys  Asn Lys Phe Lys Asn  Arg Leu Val Asn Ile  Met Pro Tyr
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Glu Ser  Thr Arg Val Cys Leu  Gln Pro Ile Arg Gly  Val Glu Gly
    1025                1030                1035

Ser Asp  Tyr Ile Asn Ala Ser  Phe Leu Asp Gly Tyr  Arg Gln Gln
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Lys Ala  Tyr Ile Ala Thr Gln  Gly Pro Leu Ala Glu  Thr Thr Glu
    1055                1060                1065

Asp Phe  Trp Arg Met Leu Trp  Glu His Asn Ser Thr  Ile Val Val
    1070                1075                1080

Met Leu  Thr Lys Leu Arg Glu  Met Gly Arg Glu Lys  Cys His Gln
    1085                1090                1095

Tyr Trp  Pro Ala Glu Arg Ser  Ala Arg Tyr Gln Tyr  Phe Val Val
    1100                1105                1110

Asp Pro  Met Ala Glu Tyr Asn  Met Pro Gln Tyr Ile  Leu Arg Glu
    1115                1120                1125

Phe Lys  Val Thr Asp Ala Arg  Asp Gly Gln Ser Arg  Thr Val Arg
    1130                1135                1140

Gln Phe  Gln Phe Thr Asp Trp  Pro Glu Gln Gly Val  Pro Lys Ser
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Glu Gln Phe Gly Gln Asp Gly Pro Ile Ser Val His Cys Ser Ala
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Gly Val Gly Arg Thr Gly Val Phe Ile Thr Leu Ser Ile Val Leu
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Glu Arg Met Arg Tyr Glu Gly Val Val Asp Ile Phe Gln Thr Val
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Lys Met Leu Arg Thr Gln Arg Pro Ala Met Val Gln Thr Glu Asp
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